What is claimed:

1. An apparatus for processing PFC to be disposed in a succeeding stage of a vacuum pump that is connected to a vacuum chamber that is used in a process for manufacturing electronic devices, the processing apparatus comprising:

a plasma process section that irradiates plasma to the PFC that is discharged under the atmospheric pressure through a vacuum pump, and a reactive material supply section that is disposed in a preceding stage of the plasma process section and adds a reactive material to the PFC to produce a mixed gas, wherein the mixed gas is subject to a plasma process under the atmospheric pressure to generate a polymer with the PFC and the reactive material.

2. An apparatus for processing PFC according to claim 1, wherein the reactive material is gas of paraffin hydrocarbon or alcohol.

3. An apparatus for processing PFC to be disposed in a succeeding stage of a vacuum pump that is connected to a vacuum chamber that is used in a process for manufacturing electronic devices, the processing apparatus comprising:

a reactive material supply section at atmospheric pressure, the reactive material supply section being adapted to receive the PFC from the vacuum pump and to add at least one of water and oxygen to the PFC at atmospheric pressure to form a mixed gas; and

an atmospheric pressure plasma process section that irradiates plasma to the mixed gas at atmospheric pressure to decompose the PFC.

4. An apparatus for processing PFC according to claim 1, further comprising a cyclone collector provided in a succeeding stage of the plasma process section, wherein the polymer is collected by the cyclone collector.

5. An apparatus for processing PFC according to claim 4, further comprising a pair of open/close type partition boards provided at a bottom section of the cyclone collector

where the polymer deposits to provide a double chamber structure at the bottom section, wherein deposition and recovery of the polymer can be simultaneously conducted by open/close operation of the partition boards.

6. A processing system comprising:

a processing chamber adapted to perform processing at below atmospheric pressure using at least a perfluorocarbon gas;

a vacuum pump connected to the processing chamber;

an atmospheric pressure section connected to the vacuum pump, wherein the vacuum pump is adapted to evacuate gas including perfluorocarbon gas from the processing chamber and deliver the gas including perfluorocarbon gas to the atmospheric section;

a reactive material input coupled to the atmospheric section, the reactive gas input being adapted to supply a reactive material to the gas including perfluorocarbon gas to form a mixed gas; and

a plasma processing device coupled to the atmospheric section and adapted to process the mixed gas to form a reaction product including a polymer.

7. A processing system as in claim 6, further comprising a gas inlet coupled to the system after the plasma process section and a polymer collection chamber coupled to the system after the gas inlet.

8. A processing system as in claim 7, wherein the gas inlet is coupled to a supply of hydrogen gas.

9. A processing system as in claim 6, wherein the reactive material input includes a supply of a paraffin hydrocarbon.

10. A processing system as in claim 6, wherein the reactive material input includes a supply of an alcohol.

11. A processing system as in claim 6, wherein the reactive material is selected from the group consisting of CH_3OH and C_2H_5OH.

12. A processing system as in claim 6, wherein the perfluorocarbon gas is selected from the group consisting of CF_4, C_2F_6, C_4F_8 and SF_6.

13. A processing system as in claim 6, wherein the perfluorocarbon gas consists of fluorine and a material selected from carbon and silicon.

14. A processing system as in claim 6, further comprising a reaction product delivery system including a delivery pipe and a cyclone collector, the cyclone collector including a chamber that is shaped to control the flow of the reaction product so that at least a portion of the reaction product flows in a circular motion.

15. A processing system as in claim 6, further comprising a reaction product delivery system comprising:

a collection chamber;

a pipe adapted to transport the reaction product from the plasma processing section to the collection chamber;

a gas port adapted to transport gas out of the collection chamber;

a first partition board adapted to extend across a portion of the collection chamber and collect a polymer product from the reaction product when the first partition board is in a closed position; and

a second partition board positioned to collect reaction product from the first partition board when the first partition board is in an open position.

16. A processing system as in claim 15, wherein the first partition board and the second partition board are formed with hinged structures so that the first partition board and the second partition board can be opened and closed.

17. A processing system as in claim 6, further comprising a reaction product delivery system comprising a collection chamber including sloped sidewalls, an upper gas port, and first and second lower partition boards, wherein the first partition board is positioned between the second partition board and the upper gas port.

18. A processing system as in claim 16, wherein an upper portion of the chamber defined in part by an upper region of the sloped sidewalls has a greater volume than a lower portion of the chamber, wherein the first partition board is positioned in the lower portion of the chamber.

19. A processing system as in claim 7, further comprising a gas inlet coupled to the system after the plasma process section and a polymer collection chamber coupled to the system after the gas inlet, wherein the gas inlet is coupled to a supply of hydrogen gas; wherein the reactive material is selected from the group consisting of CH_3OH and C_2H_5OH; and wherein the perfluorocarbon gas is selected from the group consisting of CF_4, C_2F_6, C_4F_8 and SF_6.